

1.0 INTRODUCTION

1.1 Monitoring Program Status

The 1994–1995 storm season was the first during which stormwater monitoring was required under the 1990 Los Angeles County National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit (No. CA0061654) (Los Angeles Regional Water Quality Control Board (LARWQCB), 1990). Automated and manual sampling was conducted to characterize stormwater quality and quantity during the 1994–1995 and 1995–1996 seasons.

The 1996–1997 season was the first storm season during which stormwater monitoring was conducted under the 1996 Municipal Stormwater Permit (No. CAS614001) (LARWQCB, 1996). Under the 1996 Municipal Stormwater Permit, the Monitoring Program scope was expanded to incorporate additional data collection through the mass emission, land use, and critical source monitoring programs as well as new pilot studies (e.g., wide channel and low-flow analyses).

Under the 2001 Los Angeles County Municipal Stormwater Permit (2001 Permit) (LARWQCB, 2001) adopted on December 13, 2001, land use and critical source elements were eliminated from the Monitoring and Reporting Program, and the Program focused on core monitoring, regional monitoring, and three special studies. As a result of the varying compliance dates for each element, only mass emission, water column toxicity, and shoreline monitoring under the core Monitoring Program were addressed in the 2001–2002 Monitoring Report.

The 2002–2003 through 2012–2013 monitoring reports addressed the following programs and associated elements under the 2001 Permit:

- Core Monitoring Program – mass emission, tributary, water column toxicity, shoreline, and trash monitoring.
- Regional Monitoring Program – estuary sampling and bioassessment.
- Special studies – the results of three special studies.

An Integrated Receiving Water Impacts Report, prepared in 2004–2005 (Weston Solutions, Inc. (WESTON), 2005), also incorporated the results, analysis, and progress of the previously mentioned monitoring programs. The report also assessed trends from 1994–2005. Annual stormwater monitoring reports are presented on the Los Angeles County Department of Public Works (LADPW) website at http://dpw.lacounty.gov/wmd/NPDES/report_directory.cfm.

The 2012 Los Angeles County Municipal Stormwater Permit (2012 Permit) (LARWQCB, 2012), which became effective on December 28, 2012, requires permittees to develop a new monitoring program. The County of Los Angeles (County) and the Los Angeles County Flood Control District (LACFCD) have submitted Coordinated Integrated Monitoring Programs (CIMPs) for their respective watersheds to the LARWQCB. Most of the CIMPs have been approved, or approved with conditions. The County and the LACFCD are currently awaiting approval of the remaining CIMPs by the Executive Officer.

Section IV.C.8 of the 2012 Monitoring and Reporting Program provides that the monitoring requirements pursuant to the 2001 Permit, Monitoring and Reporting Program CI 6948, and

approved Total Maximum Daily Load (TMDL) monitoring programs shall remain in effect until the CIMPs are approved. Accordingly, for the 2013-2014 and 2014-2015 monitoring years, monitoring has been conducted under the protocols set forth in that order and those plans. This report, the *2014-2015 Annual Stormwater Monitoring Report*, sets forth the results from June 1, 2014 to May 31, 2015.

1.1.1 Core Monitoring

1.1.1.1 Mass Emission Monitoring

Monitoring was conducted at seven mass emission monitoring stations (i.e., Ballona Creek (S01), Malibu Creek (S02), Los Angeles River (S10), Coyote Creek (S13), San Gabriel River (S14), Dominguez Channel (S28), and Santa Clara River (S29)) during the 2014–2015 reporting period. Mass emission stations (MES) capture runoff from major county watersheds that generally have heterogeneous land use. All MES, except the Santa Clara River station, are equipped with automated samplers, including integral flow meters for flow-composited sample collection.

Sampling at the Santa Clara River MES began during the 2002–2003 storm season. At this station, samples were collected manually, and flow-weighted composite samples were primarily produced using flow estimates obtained by monitoring staff.

The 2001 Monitoring Program specified annual monitoring of a minimum of three wet weather events, including the first storm event of the year. During the 2014-2015 monitoring year, three grab samples and three composite samples were collected during wet weather at each of the MES. This included the first storm of the year, 2014-15Event04 (except at the Malibu Creek MES, where runoff remained at baseflow throughout this storm and therefore samples were not collected).

Grab samples were analyzed for conventional pollutants and bacteria. Composite samples were flow-weighted and were analyzed for general minerals, hydrogen ion concentration (pH), nutrients, metals, semivolatile organics, base neutral, chlorinated pesticides, polychlorinated biphenyls (PCBs), organophosphate pesticides, and herbicides. In addition, composite samples from two storm events at each MES were analyzed for toxicity as described in Section 1.1.1.2. Eight additional storms were monitored, for a total of 11 storms, for total suspended solids (TSS) analysis at the San Gabriel River MES. An additional seven storms were monitored, for a total of 10 storms, for TSS at the Coyote Creek MES. An additional six storms were monitored, for a total of nine storms, for TSS at the Ballona Creek, Los Angeles River, and Dominguez Channel MES (TSS was not analyzed at the Los Angeles River MES during 2014-15Event08 due to equipment failure). An additional five storms were monitored, for a total of eight storms, at the Malibu Creek MES. Per the 2001 Monitoring Program, additional TSS analysis was not conducted where manual sampling was required (i.e., Santa Clara River MES).

Two dry weather monitoring events were conducted at each MES except at San Gabriel River, where only one dry weather monitoring event was possible due to dry conditions (no flow). Grab samples were collected and analyzed for conventional pollutants and bacteria during both dry weather monitoring events. Composite samples were also collected for all dry weather events

and were analyzed for TSS, general minerals, pH, nutrients, metals, semivolatile organics, base neutral, chlorinated pesticides, PCBs, organophosphate pesticides, and herbicides.

Appendix K – Table of Monitoring Events presents the dates of the wet and dry weather sampling events.

1.1.1.2 Water Column Toxicity Monitoring

The 2001 Monitoring Program provided that mass emission samples shall be analyzed for toxicity during two dry weather events and during two storm events, including the first storm of the monitoring year. Composite samples were taken at each MES for toxicity analyses. During the 2014-2015 monitoring year, samples from two wet weather events were analyzed at each MES. Samples from two dry weather events were also analyzed at each MES, with the exception of San Gabriel River, where only one dry weather sample was collected due to dry conditions.

1.1.1.3 Tributary Monitoring

The 2001 Monitoring Program required that tributaries shall be monitored to identify sub-watersheds where stormwater discharges and non-stormwater (dry weather) discharges are causing or contributing to exceedances of water quality standards, and to prioritize drainage and sub-drainage areas requiring management actions.

During the 2014-2015 monitoring year, sampling was continued at six tributary monitoring stations in the Malibu Creek Watershed. The tributaries monitored included Upper Las Virgenes Creek (TS25), Cheseboro Canyon (TS26), Lower Lindero Creek (TS27), Medea Creek (TS28), Liberty Canyon Channel (TS29), and PD 728 at Foxfield Drive (TS30). Sampling at these tributary stations began in the 2011-2012 monitoring year. The 2001 Monitoring Program specified a minimum of four storm events at each tributary station shall be monitored, including the first storm event of the year. During the 2014-2015 monitoring year, this requirement was met; four grab samples and four composite samples were collected during wet weather at each of the tributary stations. Grab samples were analyzed for conventional pollutants and bacteria. Flow-weighted composite samples were analyzed for TSS, general minerals, pH, nutrients, metals, semivolatile organics, base neutral, chlorinated pesticides, PCBs, organophosphate pesticides, and herbicides.

Two dry weather monitoring events were conducted at each of the tributary stations except Lower Lindero Creek, where three monitoring events were conducted. During each dry weather monitoring event, grab samples were collected and analyzed for conventional pollutants and bacteria. Composite samples were also collected at each tributary station during the dry weather events and analyzed for general minerals, pH, heavy metals, semi-volatiles, TSS, and pesticides (Appendix K).

1.1.1.4 Shoreline Monitoring

The 2001 Monitoring and Reporting Program required the City of Los Angeles to monitor shoreline stations to evaluate the impacts to coastal receiving waters and loss of beneficial uses that result from stormwater/urban runoff. Per the 2001 Monitoring and Reporting Program, the Shoreline Monitoring program consisted of sampling and indicator bacteria analysis of 18 water quality stations along the Pacific Ocean Shoreline within Santa Monica Bay. In addition, the

2001 Permit required that the City of Los Angeles perform an annual assessment of shoreline water quality data and submit these data to the Los Angeles County Flood Control District (LACFCD) for inclusion in the monitoring report. The City of Los Angeles's assessment is included as Appendix D of this monitoring report.

1.1.1.5 Trash Monitoring

In accordance with the protocols of the 2001 Monitoring and Reporting Program, visual observations of trash were made, and at least one photograph was taken at each MES after the first storm event and at least three additional storm events, with the exception of the Santa Clara River MES, where two additional storm events were monitored. At the Ballona Creek, Los Angeles River, Coyote Creek, and San Gabriel River MES, trash monitoring was conducted during one additional storm event, for a total of five storms. At the Malibu Creek MES, four additional storms were monitored for trash, for a total of seven storms. The Malibu Creek MES was not sampled or photographed during the first event since runoff remained at baseflow throughout the storm and sampling was not conducted during that storm.

The 2001 Monitoring and Reporting Program required Permittees in the Ballona Creek and Los Angeles River watersheds to capture and quantify trash. The results of this activity are described in Appendices I and J, respectively.

1.1.2 Regional Monitoring

The 2001 Monitoring and Reporting Program required the LACFCD to participate in regional monitoring programs including estuary and bioassessment monitoring. This section discusses these programs, as well as additional regional monitoring that the County and LACFCD participated in during Bight '13.

1.1.2.1 Estuary Sampling

The LACFCD participated in the coastal ecology committee of the Bight '03 project coordinated by the Southern California Coastal Water Research Project (SCCWRP). The goal of this study was to supplement the regional monitoring of the Southern California Bight estuarine habitats by sampling estuaries for sediment chemistry, sediment toxicity, and benthic infaunal communities and to determine the spatial extent of potential impacts from stormwater discharges. All reports pertinent to the Bight '03 Project have been completed by SCCWRP and were released on the SCCWRP website during the summer of 2007:

(<http://www.sccwrp.org/Documents/BightDocuments/Bight03Documents/Bight03AssessmentReports.aspx>).

The Los Angeles County Department of Beaches & Harbors, the Los Angeles County Sanitation Districts, and the Los Angeles Department of Water and Power participated in the coastal ecology committee of the Bight '08 project coordinated by SCCWRP. Estuarine habitats were sampled for sediment chemistry, sediment toxicity, and benthic infaunal communities. Reports have been completed by SCCWRP and were released on the SCCWRP website:

(<http://www.sccwrp.org/Documents/BightDocuments/Bight08Documents/Bight08AssessmentReports.aspx>).

The Los Angeles County Sanitation District participated in the contaminant impact assessment (formerly coastal ecology) committee of the Bight '13 project coordinated by SCCWRP. Sampling was conducted over the summer of 2013. As in previous Bight studies, marine habitats were sampled for sediment chemistry, sediment toxicity, and benthic infaunal communities. Preliminary findings will be posted on the SCCWRP website as they become available. Planning documents are currently available for review: (<http://www.sccwrp.org/Documents/BightDocuments/Bight13Documents/Bight13PlanningDocuments.aspx>).

1.1.2.2 Areas of Biological Significance

The County and LACFCD participated in the Area of Special Biological Significance (ASBS) regional monitoring program completed as part of Bight '13. This study was implemented to build on the first-of-its-kind regional ASBS monitoring study completed during Bight '08 and was designed to answer several key questions. These questions include identifying natural conditions at reference locations; determining how conditions in the ASBS compare to reference site conditions and assessing if nearby discharges are impacting the ASBS (SCCWRP, 2012b). Findings were recently published in the journal *Water Environment Research* (Schiff, et al, 2015) and indicate good overall water quality in the ASBS following storm events, with the possible exception of three parameters; total polynuclear aromatic hydrocarbons (PAH), chromium and copper.

1.1.2.3 Coastal Microbiology

The LACFCD also participated in the Bight '13 Microbiology Drainage Water Study which was designed to assess the marine impact of human fecal matter from coastal runoff. This study sought to ascertain the frequency and extent of human fecal contamination occurring from coastal drainage. Samples were collected from selected sites during both wet and dry weather and were analyzed for human fecal marker HF183 (SCCWRP 2012c). Analysis of study findings will consider the frequency as well as the magnitude of human marker detection. Findings will be posted on the SCCWRP website as they become available. (<http://www.sccwrp.org/Documents/BightDocuments/Bight13Documents/Bight13AssessmentReports.aspx>).

1.1.2.4 Bioassessment

Bioassessment monitoring was conducted to help assess the biological integrity of waterbodies and to help determine potential sources of biological impairment, where they may exist. A series of metrics or indices are used to characterize the streambed biological community as well as the physical habitat of a station. These metrics can be compared with those found at reference stations to help determine the potential for anthropogenic influences on the biological community. The LACFCD typically performs annual Los Angeles County stream bioassessments in June or July during early summer baseline conditions. Sampling stations are located throughout each of the six major watersheds and were selected to represent the diverse environments of the Los Angeles region. Table 1-1 lists the sampling station locations, and Figure 1-1 shows the geographical location of the sampling stations. In 2014, bioassessment monitoring was conducted at 16 stations – four in the San Gabriel River watershed, six in the Los Angeles River watershed, one in the Dominguez Channel watershed, three in the Santa Monica

Bay watershed, and two in the Santa Clara River watershed. The final report for the 2014 Bioassessment Monitoring Program is included in Appendix H.

Laboratory methods incorporated a new Surface Water Ambient Monitoring Program (SWAMP) laboratory standard operating procedure (SOP) beginning in 2013. The sampling and analysis for the 2014 survey was performed using the same protocols as in the 2009–2012 surveys, with the exception of this SWAMP laboratory protocol.

1.1.3 Special Studies

The 2012 Permit's monitoring program requires each permittee to conduct the special studies required in an effective TMDL or an approved applicable TMDL Monitoring Plan.